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"Western Treasure -- Deep, Wet Snow"

FEDERAL-STATE COOPERATIVE SNOW SURVEYS AND IRRIGATION WATER FORECASTS

for

MONTANA

MAY 1, 1948

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U. S. DEPARTMENT OF AGRICULTURE

by

Montana Agricultural Experiment Station
and
Division of Irrigation, Soil Conservation Service
United States Department of Agriculture

in cooperation with

U. S. Forest Service
U. S. Geological Survey
U. S. National Park Service
State Engineer of Montana
U. S. Bureau of Reclamation

FEDERAL-STATE COOPERATIVE

SNOW SURVEYS AND IRRIGATION WATER FORECASTS

FOR

MONTANA

Report Prepared

By

O. W. Monson — Irrigation Engineer

Division of Irrigation
Soil Conservation Service
State Engineer of Montana
and
Montana State Agricultural Experiment Station
Bozeman, Montana

INDEX TO MONTANA SNOW COURSES

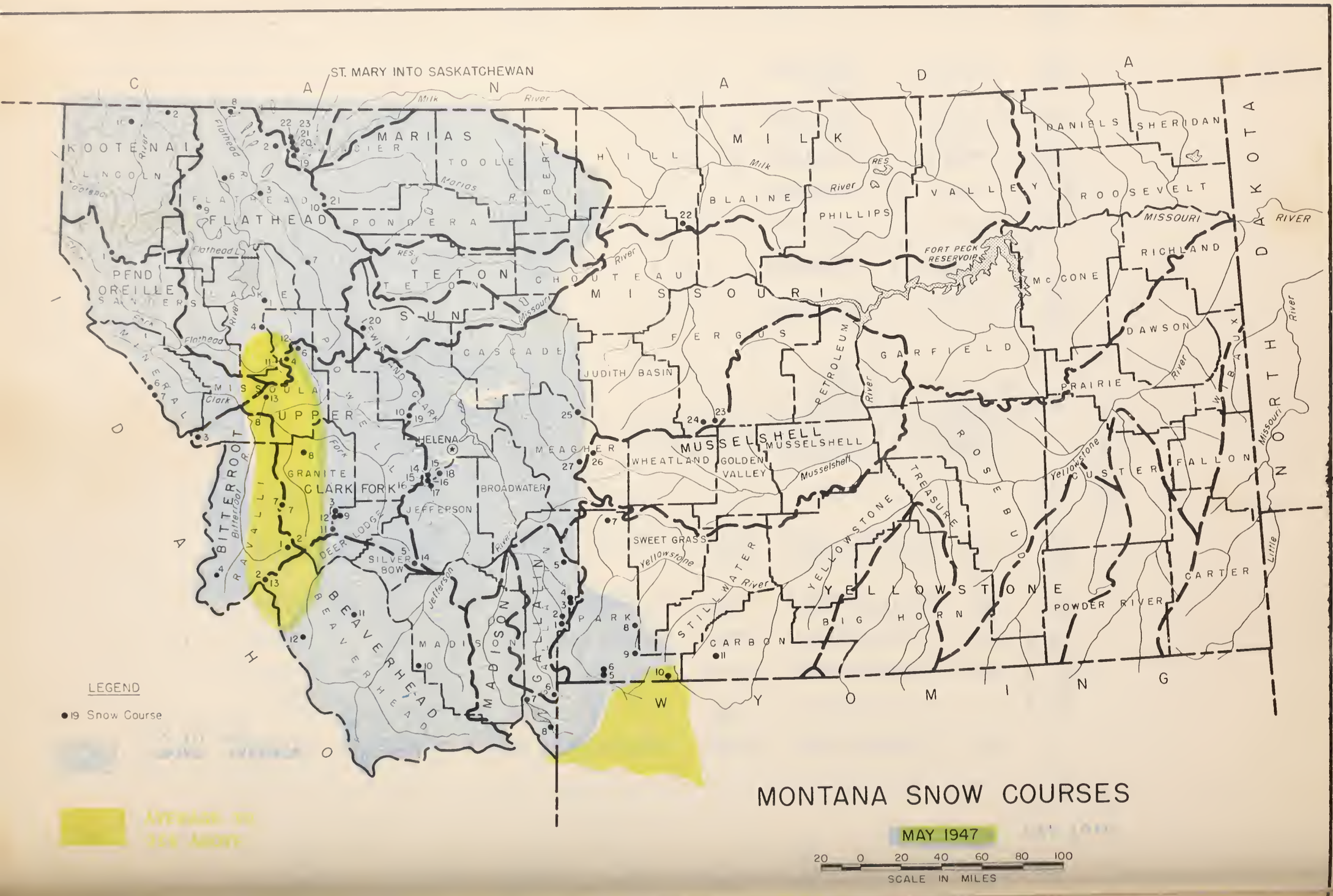
Name	Montana Number	Elev.	Location Sec. Twp. Range Lat. Long.	Record Began	Measuring Dates[a]	Measured By:[b]
COLUMBIA DRAINAGE						
MAI RIVER						
Mountain	1	6000	1 25N 31W	1937	4,5	1
ird Basin	2	6800	24 37N 26W	1937	4,5	1
ountain	10	6000	4 36N 29W	1937	2,3,4,5	1
CLARK FORK						
man Reservoir	1	6200	2 8N 5W	1936	1,2,3,4,5	2
Fork Ranger Station	2	6400	16 2N 17W	1937	2,3,4,5	1
guard	3	6450	6 5N 13W	1939	2,3,4	3
Fork Jocko	4	6330	3 17N 17W	1941	3,4,	4
tone Pass	5	7200	11 1N 7W	1938	2,3,4,5	1
Lake	8	4300	11 18N 16W	1947	3,4,5	1
aho Summit	7	7258	30 6N 17W	1937	4,5	1
Rock Mountain	8	7100	26 10N 16W	1937	4,5	1
ern Cross	9	6500	9 6N 13W	1939	2,3,4	3
le Pass	10	6900	18 13N 7W	1934	3,4,5	2
Lake No. 2	11	7780	19 4N 13W	1939	4,6	1
t Mill	12	6500	19 5N 13W	1939	2,3,4	3
t Mountain #1	13	7400	6 14N 18W	1938	2,3,4,5	1
le Creek, Lower	14	6250	13 8N 6W	1935	1,2,3,4,5	2
le Creek, Middle	15	6800	13 8N 6W	1934	1,2,3,4,5	2
le Creek, Upper	16	8000	19 8N 5W	1935	1,2,3,4,6	2
KROOT RIVER						
Fork Ranger Station	1	5400	16 2N 17W	1937	2,3,4,5	1
ns Pass	2	7100	4 2S 19W	1934	2,3,4,5	1,2
rest Pasture	3	4500	24 11N 24W	1937	2,3,4,6	1
rce Camp	4	5580	19&20 1S 23W	1937	2,3,4,5	1
aho Summit	7	7258	30 6N 17W	1937	4,6	1
t Mountain #1	8	7400	6 14N 18W	1936	3,4,5	1
EAD RIVER						
reek	1	6750	6&7 22N 16W	1941	4,5	4
e Queen	2	4700	7 36N 17W	1939	3,4	5
t Mountain	3	5600	24 31N 19W	1937	4,6	1
ountain	4	6750	1 20N 19W	1941	3,4	4
Mountain	5	7000	47°39' 112°54'	1934	3,4	2
Roaring Creek Divide	6	5770	35 32N 22W	1942	4,6	1
Ridge	7	6200	8 25N 15W	1937	4,5	1
nahn	8	4300	7 37N 21W	1946	4,5	5
Creek	9	4300	34 30N 24W	1937	4,5	1
s Pass	10	5250	48°19' 113°21'	1934	1,2,3,4,5	2
Fork Jocko	11	6330	3 17N 17W	1941	3,4,5	4
Lake	12	4300	11 18N 16W	1947	3,4,5	1
ORSILLE RIVER						
Mountain	1	6000	1 25N 31W	1937	4,5	1
scout Summit	6	7000	21 15N 27W	1937	3,4,5	1
o Creek	7	8200	9&16 14N 27W	1937	3,4,5	1
MISSOURI RIVER DRAINAGE						
RHEAD RIVER						
light	10	6950	22 8S 7W	1945	3,4	1
rn	11	8450	15 4S 12W	1934	3,4,5	2
Lake	12	6720	10 6S 16W	1945	3,4	1
s Pass	13	7100	4 2S 19W	1934	2,3,4,5	1,2
N RIVER						
n	7	6550	22 11S 3E	1934	1,2,3,4,5	2
Yellowstone	8	6700	34&35 13S 5E	1934	1,2,3,4,5	2
TIN RIVER						
's Slide	1	8100	14 5S 6E	1935	3,4,5	2,6
Meadow Extension	2	6600	22 4S 6E	1934	3,4,5	2,6
Lake #1 and #2	3	6600	30 3S 7E	1935	1,2,3,4	6,7
rld Trail	4	6700	24 3S 6E	1939	3,4	6,7
Peak	5	7000	10 1N 6E	1939	3,4	1,6
le	6	7150	1 11S 5E	1934	2,3,4,5	2
MISSOURI RIVER DRAINAGE (Cont.)						
YELLOWSTONE RIVER						
Crevice #1	5	8400	29 9S 9E	1935	3,4	1
Crevice #2	8	8150	26 9S 9E	1935	3,4	1
Porcupine	7	6600	10 4N 10E	1938	3,4	1
Hells Canyon	8	6000	23 5S 12E	1940	3,4	6
Independence	9	8000	22 7S 12E	1940	3,4	6
Cooke City	10	7400	25 9S 14E	1937	1,2,3,4,5	5
Camp Senia	11	7890	2 8S 18E	1938	3,4	1
MUSSELSHELL RIVER						
Orville Harris	26	6600	31 10N 9E	1938	3,4	6
MISSOURI RIVER MAIN STEM						
Pipestone Pass	14	7200	11 1N 7W	1938	2,3,4,5	1
Tenmile Creek, Lower	15	6250	13 8N 6W	1935	1,2,3,4,5	2
Tenmile Creek, Middle	16	6800	13 8N 6W	1934	1,2,3,4,5	2
Tenmile Creek, Upper	17	8000	19 8N 6W	1935	1,2,3,4,5	2
Cheeseman Reservoir	18	8200	2 8N 5W	1936	1,2,3,4,5	2
Stemple Pass	19	6900	16 15N 7W	1934	3,4,5	2
Half Moon	23	6000	22 12N 18E	1940	3,4	1,6
Crystal Lake	24	6100	24 12N 17E	1941	3,4	1,6
Kings Hill	25	7950	35 13N 7E	1937	3,4,5	2
Grasshopper	27	7000	19 9N 8E	1938	3,4	1,6
SUN RIVER						
Goat Mountain	20	7000	47°31' 112°55'	1934	4,5	2
MARIAS RIVER						
Marias Pass	21	5250	48°19' 113°21'	1934	1,2,3,4,6	2
MILK RIVER						
Rocky Boy	22	5200	15 28N 16E	1942	3,4	6
SASKATCHEWAN RIVER DRAINAGE						
ST. MARY RIVER						
Piegan Pass #6	19	6600	48°45' 113°42'	1922	5	2,8
Piegan Pass #4	20	5000	48°46' 113°40'	1922	5	2,8
Mount Allen	21	7000	48°44' 113°40'	1922	5	2,8
Ptarmigan #8	22	5800	48°50' 113°42'	1922	5	2,8
Iceberg Lake	23	6000	48°50' 113°42'	1922	5	2,8

a. Numerals 1,2,3,4, and 6 refer to January 1, February 1, March 1, April 1, and May 1.

b. Numerals refer to Agency that secures the snow survey, as follows:

1. U. S. Forest Service
2. U. S. Geological Survey and U. S. Engineer Corps
3. Montana Power Company
4. U. S. Indian Service
5. National Park Service
6. Montana Experiment Station
7. City of Bozeman
8. Dominion Water and Power Bureau

c. Discontinued 1943-1947


ST. MARY INTO SASKATCHEWAN
CANADA
NORTH DAKOTA
WYOMING
KOOTENAI
LINCOLN
FLATHEAD
MARIAS
GLACIER
TOOLE
PONDERA
PENDOREILLE
SANDERS
LAKE
TETON
CHOUTEAU
SUN RIVER
CASCADE
JUDITH BASIN
FERGUS
MISSOULA
UPPER
GRANITE
CLARK FORK
HELENA
MEAGHER
BROADWATER
JEFFERSON
BITTERROOT
RAVALLI
DEER LODGE
SILVER BOW
BEAVERHEAD
MADISON
GALLATIN
PARK
SWEET GRASS
MUSSELSHELL
WHEATLAND
GOLDEN VALLEY
CARBON
STILLWATER
YELLOWSTONE
BIG HORN
TREASURE
ROSEBUD
POWDER RIVER
CARTER
CUSTER
FALLON
PRAIRIE
DAWSON
GARFIELD
MCCONE
RICHLAND
ROOSEVELT
DANIELS
SHERIDAN
VALLEY
PHILLIPS
BLAINE
HILL
MILK
PETROLEUM
FORT PECK RESERVOIR
Milk River
Missouri River
Yellowstone River
Flathead River
Flathead L.
Marias R.
Clark Fork
Bitterroot
Jefferson
Little Missouri
Little Missouri River
LEGEND
19 Snow Course
AVERAGE TO 25% ABOVE
MONTANA SNOW COURSES
MAY 1947
20 0 20 40 60 80 100
SCALE IN MILES

SUMMARY

Above normal runoff from the watersheds of Western Montana may be expected, together with exceptionally high peak flows from mountain streams, because of the above average snow pack as measured May 1st. This confirms the prediction made last month.

Soil moisture conditions in the dry farming areas of the state are below average and particularly at the Huntley Field Station are reported as unfavorable.

Reservoir storage is about 65% filled, which is approximately the same as for 1947 on the same date.

Precipitation at a number of representative stations is slightly below normal.

WATER SUPPLY OUTLOOK IN MONTANA, MAY 1, 1948

Stream Flow - The stream flow was slightly above normal on most streams in Montana during April, but the flow of the Yellowstone at Corwin Springs was 5% below normal. The average flow of the Judith River near Utica was three times the normal for April. Forecast estimates are given for a number of representative gauging stations.

Soil Moisture Conditions - Observations made at the North Montana Branch Station on May 1st indicate that surface moisture is better than a year ago, being generally sufficient for germination of spring planting crops. Continuously cropped land lacks sub-soil reserves but is probably in better condition than a year ago, due to improved surface moisture for germination. Crops planted on fallow are emerging with excellent stands but the reserve of moisture in the third and fourth levels is much below normal and even less than that of a year ago.

Stubble fields to be fallowed in 1948 are now rapidly becoming weedy and fast losing accumulated winter moisture. Earlier than usual initial working for fallow is therefore indicated.

At the Central Montana Branch Station seeding conditions are reported as ideal, with most of the work already completed. The accumulated moisture for the first four months of 1948 is reported to be .48 of an inch below the 39 year average.

At the Huntley Field Station the precipitation during April was considerably less than a year ago. Soil samples indicate a marked depreciation in soil moisture as compared with those taken on the 1st of April.

Moisture penetration on plots fallowed in 1947 has reached a depth of from 20 to 25 inches.

Reservoir Storage - In the Columbia Basin, 15 reservoirs having combined capacity of 205,045 acre feet were 65% full on May 1st. A year ago the amount held in storage was 55% of the total capacity.

In the Missouri Basin, 17 reservoirs for which reports are available, were 65% full, as compared with 67% for the same date in 1947.

Fort Peck reservoir contains 13,790,000 acre feet, as compared with 15,230,000 acre feet a year ago.

NARRATIVE FORECAST

Missouri Basin

Gallatin River - The water content on the Devils Slide snow course is 49% above the 14 year average. At Hood Meadow, at an elevation of 6600 feet, the water content was 175% above the 14 year average. The average for 3 courses on this watershed is approximately 86% above average.

Madison River - The average of 3 snow courses is over 69% above the 14 year average for the period of record. This is a considerable improvement over the April 1st indications.

Jefferson River - The water content is approximately 20% above average.

Main Stem Above Great Falls - Snow surveys made on the watersheds of the minor tributaries to the Missouri between Three Forks and Great Falls indicate an average water content 60% above the average for the period of record. This indicates a slight improvement over the April 1st measurements.

Sun River - No measurements were made on the Sun River watersheds as of May 1st. The April 1st survey indicated a water content approximately 33% above average.

Marias River - Water content at Marias Pass on May 1st is 110% above the average for the 14 year period of record.

Musselshell River - The water content observed at Kings Hill on May 1st is approximately 47% above the average for the period of record. This is one of two snow courses on which a gain occurred during April.

Yellowstone Basin

Main Stem Above Livingston - Measurements made May 1st at Canyon showed a depth of 36.5 inches of snow containing 10.8 inches of water. At Lake the snow depth was 31.6 inches and the water content 9.5 inches. This is approximately 5% above the normal conditions.

Shields River - No measurements were made on May 1st. On April 1st the water content readings were 50% above average.

Clarks Fork River - Measurements made at Cooke City showed a snow depth of 21.8 inches and water content of 6.5 inches. This compares with 4.8 inches a year ago. On April 1st the water content was 45% above average.

Columbia Basin

Bitterroot Watershed - The water content at two locations on the Bitterroot watershed is approximately 20% above the average. At East Fork Ranger Station, at an elevation of 5400 feet, the snow has entirely disappeared.

Blackfoot River - Water content as of May 1st is 15% above the average. There was a slight loss since April 1st.

Clarks Fork Above Milltown - The water content indicated has increased 1.5 inches since April 1st. It is now about 50% above average.

Flathead River - On the Flathead River watershed the accumulated snow pack is approximately 45% above the average.

Kootenai River - The water content on Red Mountain snow course as of May 1st is 16.2 inches, as compared with an average of 13 inches. This is equal to 24% above the 12 year average.

FORECAST OF RUNOFF AT A NUMBER OF REPRESENTATIVE GAUGING STATIONS IN THE MISSOURI AND YELLOWSTONE BASINS

Name of Stream	May - June	July-Aug.-Sept.	May - June
	Sec. Ft. Days	Sec. Ft. Days	Sec. Ft. Days
Gallatin River at Gateway	189,800 ± 15%	44,000 ± 25%	121,642
Hyalite Creek	12,966 ± 15%	6,553 ± 15%	9,320
Madison River at West Yellowstone	49,600 ± 15%	32,000 ± 15%	42,467
North Fork of Musselshell River at Delpine	2,000 ± 20%	1,100 ± 15%	1,247
Yellowstone River at Corwin Springs	514,000 ± 10%	381,600 ± 20%	467,367
Shields River at Wilsall	17,000 ± 25%	3,600 ± 20%	13,007
Clarks Fork of Yellowstone at Chance	300,720 ± 15%	May-June-July	233,200
West Fork of Rock Creek Below Basin Creek	18,000 ± 25%	19,600 ± 25%	12,425
Red Lodge Creek Above Cooney Reservoir	*10,669 ± 20%	Maximum Month	7,710
Missouri River at Fort Benton	836,650 ± 15%		722,522

* Probably Low

Montana SNOW SURVEYS May 1, 1948

MISSOURI BASIN

WATERSHED and SNOW COURSE	LOCATION State	No.	Sec.	Twp. or Lat.	Range or Long.	Elev.	Date of Survey	SNOW MEASUREMENTS Depth (in.) 1948	Water Content (Inches) 1948	Same Approx. 1947	Same Date 1946	Past Record Years of Record	Av. Water* Content (Inches)
Gallatin River													
Devil's Slide	Mont.	1	14	5S	6E	8100	4-30	78.8	30.5	28.2	22.3	14	20.4
Hood Meadow Ext.	"	2	22	4S	6E	6600	4-30	30.6	9.9	7.3	1.3	14	3.6
21 Mile	"	6	1	11S	5E	7150	4-28	36.4	12.6	14.6	10.3	14	9.3
Madison River													
Hebgen Lake	"	7	22	11S	3E	6550	4-28	22.4	7.4	1.6	1.2	14	2.2
21 Mile	"	6	1	11S	5E	7150	4-28	36.4	12.6	14.6	10.3	14	9.3
West Yellowstone	"	8	34	13S	5E	6700	4-28	13.1	4.5	3.7	1.8	14	3.0
Jefferson River													
Elkhorn	"	11	15	4S	12W	8450	4-29	29.0	8.8	No Report			4.4
Gibbons Pass	"	13	4	2S	19W	7100	4-30	52.1	21.3	25.4	17.4	12	18.4
Main Stem Above Great Falls													
Chesman	"	18	2	8N	6W	6200	4-30	12.8	4.6	1.2	0.0	12	1.1
Kings Hill	"	25	35	13N	7E	7950	4-29	40.4	14.6	No Report			9.9
Rimini Lower	"	15	13	8N	6W	6250	5-3	6.8	2.1	2.1	0.0	13	1.5
Rimini Middle	"	16	13	8N	6W	6800	5-4	29.4	8.9	11.8	1.4	13	6.1
Rimini Upper	"	17	19	8N	5W	8000	5-4	43.6	14.6	14.6	4.6	13	9.3
Stemple Pass	"	19	16	13N	7W	6900	4-30	27.0	8.3	7.8	2.0	14	4.9
Marias River													
Marias Pass	"	21	48.3N		113.4W	5250	5-2	36.9	15.3	11.5	8.8	14	7.2
Mussellshell River													
Kings Hill	"	25	35	13N	7E	7950	4-29	40.4	14.6	No Report			9.9

* Average water content for period of record.

Montana SNOW SURVEYS May 1, 1948

YELLOWSTONE

DRAINAGE BASIN and SNOW COURSE	LOCATION State	No.	Sec.	Twp. or Lat.	Range or Long.	Elev.	Date of Survey	SNOW MEASUREMENTS Snow Depth (in.) 1948	Water Content (Inches) 1948	Same Approx. 1947	Same Date 1946	PAST RECORD Years of Record	Av. Water * Content (Inches)
Main Stem													
Canyon #2	Mont.	2	44.7N		110.5W	7750	5-1	36.5	10.8	14.2	No Report		
Lake	"	1	44.6N		110.4W	7850	5-1	31.6	9.5	7.1	No Report		
Clarks Fork													
Cooke City	"	10	25	9S	14E	7400	5-1	21.8	6.5	4.8	No Report		

* Average water content for period of record.

Montana SNOW SURVEYS May 1, 1948

COLUMBIA

WATERSHED and SNOW COURSE	LOCATION State	No.	Sec.	Twp. or Lat.	Range or Long.	Elev.	Date of Survey	SNOW COVER MEASUREMENTS Snow Depth (in.) 1948	Water Content (Inches) 1948	Same Approx. Date 1947	Same Approx. Date 1946	Years of Record	Past Record Av. Water Content (Inches) *
Bitterroot													
Gibbons Pass	Mont.	M13	4	2S	19W	7100	4-30	52.0	21.3	25.4	17.4	12	18.4
Skalkaho	"	7	30	6N	17W	7258	5-3	66.0	26.7	30.7	20.9	12	21.3
E. Fk. Ranger Sta.	"		16	2N	17W	5400	4-30	0.0	0.0	0.0	0.0	10	0.0
Blackfoot River													
Stuart Mt.	"	9	6	14N	18W	7400	4-30	70.0	31.2	44.6	30.2	12	27.0
Clark Fork Above Milltown													
Storm Lake	"	3	19	4N	13W	7780	5-3	57.5	21.2	17.9	10.1	11	13.8
Clark Fork Below Milltown													
Lookout	Idaho		4	47N	6E	5250	4-30	80.0	34.8	27.2	32.8	12	22.0
Packers Meadow	"		15	38N	15E	5700	5-1	46.0	22.0	26.1	11.7	12	10.5
Flathead													
Hell Roaring Cr. Divide	Mont.	6	35	32N	22W	5770	4-29	72.0	31.0	32.1	30.5	6	23.4
Desert Mt.	"	3	24	31N	19W	5600	4-28	42.0	14.9	16.0	10.5	12	8.3
Kootenai													
Red Mountain	"	10	4	36N	29W	6000	5-3	42.0	16.2	18.8	18.7	12	13.0

* Average water content for period of record

STORAGE IN RESERVOIRS OF MONTANA

COLUMBIA RIVER BASIN — APRIL 30, 1948

DATA FURNISHED BY OPERATING ORGANIZATIONS

COMPILED BY WATER RESOURCES BRANCH, U. S. GEOLOGICAL SURVEY, HELENA, MONT.

Reservoir	Located on or Diverting From	Usable Capacity Acre-feet	Contents This Month-End	Contents Month Ago	Contents Year Ago
a Georgetown Lake	Flint Creek	31,000	20,970	25,690	22,270
b W.Fk.Bitterroot Res.	W.Fk.Bitterroot R.	31,700	20,500	10,000	22,000
a Flathead L. (Somers)	Flathead River	*1,791,000	948,400	558,200	1,137,000
d Little Bitterroot L.	Little Bitterroot R.	18,000	13,400	13,400	7,800
d Hubbart Reservoir	Little Bitterroot R.	12,100	12,120	10,960	7,640
d Upper Dry Fork Res.	Dry Fork Creek	2,700	2,070	1,120	2,000
d Dry Fork Res.	Dry Fork Creek	4,000	3,490	2,570	3,600
d Twin Reservoir Canals	(Mission Valley)	600	238	170	262
d Pablo Res. Canals	(Mission Valley)	25,000	15,670	13,210	15,290
d Lower Crow Res.Crow Cr.	(Mission Valley)	10,350	9,510	8,580	9,840
d Kicking Horse Res. Can.	(Mission Valley)	8,350	7,840	6,830	3,610
d Ninepipe Res. Can.	(Mission Valley)	14,870	12,250	11,800	12,250
d McDonald Res. Post Cr.	(Mission Valley)	8,225	6,420	7,480	2,560
d Mission Res. Mission Cr.	(Mission Valley)	7,250	2,740	1,560	785
d Tabor Res. Dry Cr.	(Mission Valley)	23,300	6,050	2,020	3,070
d Lower Jocko L.Jocko R.	(Mission Valley)	7,600	Snowbound	Snowbound	1,060

Data furnished by:

a Montana Power Company

b Montana State Water Conservation Board

d Office of Indian Affairs

* Contents at elev. 2893, considering 2878 as base. Contents at authorized min. elev. 2883, 572,300 acre-feet.

STORAGE IN RESERVOIRS OF MONTANA

MISSOURI RIVER BASIN — APRIL 30, 1948

DATA FURNISHED BY OPERATING ORGANIZATIONS

COMPILED BY WATER RESOURCES BRANCH, U. S. GEOLOGICAL SURVEY, HELENA, MONT.

Reservoir	Located on or diverting from	Usable Capacity Acre-feet	Contents this Month-end	Contents Month Ago	Contents Year Ago
a Lake Sewall	Missouri	37,800	23,650	36,980	35,470
a Hauser Lake	Missouri	52,090	31,440	45,730	39,730
a Holter Reservoir	Missouri	73,600	51,200	43,240	59,540
b Ft. Peck Reservoir	Missouri	19,000,000	13,790,000	13,440,000	15,230,000
a Hebgen Reservoir	Madison R.	345,000	185,300	257,600	179,100
a Madison Reservoir	Madison R.	41,000	36,390	38,010	38,470
d Gibson Reservoir	N. Fk. Sun R.	105,000	71,490	64,410	64,640
d Willow Creek	N.Fk.Sun & Willow Cr.	32,300	19,060	17,170	16,940
d Pishkun Reservoir	N. Fk. Sun R.	32,000	20,840	20,840	17,230
e Lower Two Medicine L.	Two Medicine R.	14,000	0	0	9,800
e Four Horns Res.	Badger Creek	20,000	7,420	7,360	11,800
f Birch Creek Res.	Birch Creek	30,000	27,210	20,990	28,380
f L. Francis Res.	Birch & Dupuyer Cr.	112,000	107,950	102,650	105,100
d Fresno Reservoir	Milk River	127,200	131,900	77,420	131,900
a Mystic Lake	W. Rosebud Cr.	20,800	2,310	5,750	3,280
c Cooney Reservoir	Red Lodge Cr.	27,500	10,720	6,640	13,440
c Tongue River	Tongue River	73,900	24,880	16,150	9,150
g Lake Helena	Missouri River	10,450	1,980	7,200	4,640

Data furnished by:

a Montana Power Company
b U. S. Army Engineers
c Montana State Water Conservation Board
d Bureau of Reclamation
e Office of Indian Affairs
f Valier Montana Land and Water Company
g Since Apr. 26, 1945, Lake Hauser has been separated from Lake Helena by control works permitting independent regulation.

U.S. DEPARTMENT OF COMMERCE, WEATHER BUREAU
STATE OF MONTANA, MONTHLY PRECIPITATION FOR
OCTOBER 1, 1947 - APRIL 30, 1948

STATIONS	1947 OCTOBER		1947 NOVEMBER		1947 DECEMBER		1948 JANUARY		1948 FEBRUARY		1948 MARCH		1948 APRIL	
	Precip.	Dep.	Precip.	Dep.	Precip.	Dep.	Precip.	Dep.	Precip.	Dep.	Precip.	Dep.	Precip.	Dep.
WEST OF DIVIDE														
Butte	1.29	+0.50	1.50	+1.10	0.55	+0.11	0.68	+0.28	0.60	+0.16	0.77	+0.13	0.57	-0.49
Deer Lodge	1.20	+0.52	1.27	+0.72	0.42	-0.09	0.27	-0.32	0.13	-0.30	0.30	-0.31	0.39	-0.43
Hamilton	1.36	+0.45	1.10	+0.29	0.38	-0.33	1.90	+1.11	1.91	+1.16	0.73	+0.04	0.24	-0.63
Missoula	1.09	+0.14	2.41	+1.51	0.78	-0.17	1.32	+0.47	0.97	+0.15	0.41	-0.41	0.65	-0.25
CENTRAL DIVISION														
Babb	1.60	+0.42	0.82	-0.17	0.50	-0.44	0.71	-0.23	0.73	-0.09	0.84	-0.27	0.83	-0.83
Dillon	0.33	---	0.44	---	0.35	---	0.28	-0.55	0.38	-0.34	0.90	-0.26	0.87	-0.81
Fort Benton	0.38	-0.34	1.05	+0.46	0.56	+0.05	0.98	+0.32	0.56	+0.07	1.15	+0.53	1.02	-0.10
Great Falls	0.54	-0.32	1.11	+0.43	0.44	-0.21	1.23	+0.62	0.36	-0.21	1.42	+0.56	---	---
Havre	0.48	-0.19	0.38	-0.23	0.27	-0.34	0.38	-0.35	0.47	-0.05	0.47	-0.04	1.11	+0.12
Helena, WBO	0.55	-0.06	1.40	+0.95	0.27	-0.20	0.51	-0.05	0.22	-0.17	0.49	-0.30	0.58	-0.54
Livingston	0.84	---	0.87	---	0.64	---	0.66	+0.12	0.55	+0.01	0.74	-0.12	1.06	-0.26
Lewistown Arpt.	0.23	-0.13	0.88	+0.67	0.62	+0.42	1.03	+0.30	0.33	-0.44	0.86	-0.17	0.99	-0.28
Mystic Lake	1.47	-0.37	1.90	+0.32	0.77	-0.27	3.53	+2.39	1.95	+0.87	1.82	-0.23	---	---
Bozeman, Ag.Col.	0.68	---	2.15	---	1.00	---	1.11	+0.24	0.65	-0.16	0.89	-0.38	2.04	+0.35
EASTERN DIVISION														
Billings #2	0.52	---	0.63	---	0.91	+0.41	0.37	-0.26	0.23	0.19	0.54	-0.30	0.96	-0.34
Circle	0.33	-0.52	0.23	-0.34	0.24	-0.51	0.14	-0.53	0.50	-0.11	0.16	-0.84	0.26	-0.88
Frazer	0.43	-0.45	0.60	+0.07	0.46	+0.07	0.29	-0.12	0.75	+0.41	0.51	-0.19	0.88	-0.08
Malta	0.66	-0.07	0.04	-0.37	0.38	-0.08	0.16	-0.31	0.62	+0.25	0.30	-0.24	0.98	+0.18
Mildred	0.14	-0.59	0.38	+0.01	0.21	-0.11	0.53	+0.19	0.83	+0.57	0.36	-0.06	0.89	-0.18
Medicine Lake	0.28	-0.47	0.94	+0.61	0.21	-0.07	0.51	+0.20	0.72	+0.40	0.17	-0.24	1.95	+1.06
Miles City	0.39	-0.53	0.31	-0.26	0.28	-0.35	0.42	-0.24	0.74	+0.23	---	---	---	---
Fort Peck	0.33	-0.42	0.06	-0.41	0.29	+0.01	0.12	-0.26	0.42	+0.15	0.38	-0.12	---	---